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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,578	02/24/2005	Mike Muhl	WEM-07601	9309

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EXAMINER	
DESTA, ELIAS	
ART UNIT	**PAPER NUMBER**
2857	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/501,578	MUHL ET AL.	
	Examiner	Art Unit	
	Elias Desta	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3,4,6-15 and 17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3,4,6-15 and 17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 April 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

Amendment/Remark

1. The Examiner accepts the amendment to the drawing, and the objection to claims 1, 5 and 10 is withdrawn. The Examiner acknowledges the cancellation of claims 1, 2, 5, 16, and 23-36.

Applicant's remarks, see amendment, filed April 3, 2007, with respect to the rejection of claims 3, 4, 6-15, 17-22 under 35 U.S.C. 102 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of *Blendonck et al.* (IEEE Article, 'Application of an Intelligent Dielectric Sensor for Soil Water Content, Electrical Conductivity and Temperature' hereon *Blendonck*.) in combination *Yasui et al.* (U.S. Patent 6,320,393, hereon *Yasui*).

Explanation of rejection

Claim rejection – 35 U.S.C. 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 3, 4, 14, 17 and 19-22 rejected under 35 U.S.C. 103(a) as being unpatentable over *Blendonck et al.* (IEEE Article, 'Application of an Intelligent Dielectric Sensor for Soil Water Content, Electrical Conductivity and Temperature' hereon *Blendonck*) in view of *Yasui et al.* (U.S. Patent 6,320,393, hereon *Yasui*).

In reference to claims 3, 4, 14, 17, 19-22: *Blendonck* teaches a measuring system for determining a property of fluid (water) from a dielectric property of the fluid (see *Blendonck*, page 1817, abstract, page 1818, section II, 1st paragraph). The system includes:

- First sensor for measuring an electric capacitance (see *Blendonck*, page 1818, 2nd column, paragraph 1); and
- Second sensor is designed as a dielectric sensor which is immersed in a fluid (water) and has a stray-field capacitor (formed due to the capacitance of the field complex impedances of the sensors, $Z_1 \ldots Z_n$, which include capacitance values (see *Blendonck*, page 1818, 2nd column, paragraph 3). The second sensor is designed as a temperature sensor, which is immersed in water (fluid) (see *Blendonck*, page 1819, 1st column, 2nd paragraph);

However, *Blendonck* does not teach that the value of the electric capacitance measured by the dielectric sensor is compared in a comparator device of the analyzer device with a stored reference value assigned to the measured temperature value, and a signal is output as a function of whether the reference value is reached or exceeded.

Yasui teaches (see *Yasui*, FIG. 10) that the electrode 306 is connected electrically to ground of the sensor circuit 400. Both ends of the cylindrical coil 308 are connected to the

resonator circuit 401, which is composed of a CMOS inverter. An output of the resonator circuit 401 is connected to the output circuit 402. A reference 403 denotes a power supply circuit 403 for supplying a constant stabilized voltage to the overall sensor circuit, and a reference 404 denotes a temperature measuring circuit, which has a thermistor, used to execute the temperature compensation.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the measuring system for determining a property of a fluid (water) from a dielectric property of the fluid as taught by *Blendonck* in order to compare the resonance or capacitance value with a stored reference value which have a temperature measurement value or compensation to indicate if the reference value is exceeded or reached for the purposes of compensating or correcting the desired measured value, because the sensor electronics (see *Blendonck*, Fig. 7) shows having a temperature and capacitance reference value where a dielectric calibration data is used to calibrate the system. Therefore, having an output as a function temperature as noted in *Yasui* would provide the user better or precise evaluation when evaluation of fluid is carried out in different ambient environment.

In reference to claim 4: *Blendonck* in view of *Yasui* further teaches that the compensation device for correcting the measured value of the electric capacitance, taking into account a capacitance reference value is on an auxiliary capacitor situated in proximity to the measuring capacitor (see *Blendonck*, Fig. 7, $C_{ref.}$).

In reference to claim 19: *Blendonck* in view of *Yasui* further teaches that the compensation device takes calibration measurements of the first and second properties

(temperature and capacitance) because in page 1821, the "result" shows a reference resistor and capacitor to make the conductivity correction noted in Fig. 6.

With regard to claim 20: *Blendonck* in view of *Yasui* further teaches that the compensation device is an auxiliary capacitor (C_{ref}) is disposed in proximity to the first resistor (R_1) (see *Blendonck*, Fig. 7).

With regard to claim 21: *Blendonck* in view of *Yasui* further teaches that the auxiliary capacitor (as noted above) includes spur line ending upstream or adjacent from the feeder lines of the measuring capacitor of the first sensor (capacitive sensor) that is symmetrical with the feeder lines of the measuring capacitor.

With regard to claim 22: *Blendonck* in view of *Yasui* further teaches that the first and second sensor are arranged in an ASIC hence, the sensors are integrated into the ASIC, therefore the complex arrangement in *Blendonck* design would equally serve as the structural integrity concept noted in the instant application.

4. Claims 6-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Blendonck et al.* (IEEE Article, 'Application of an Intelligent Dielectric Sensor for Soil Water Content, Electrical Conductivity and Temperature' hereon *Blendonck*)

In reference to claim 6: *Blendonck* further teaches that the feeder lines of the measuring capacitor (see *Blendonck*, Fig. 7, C_1 & C_2 and the auxiliary capacitor (C_{ref}) are implemented in an ASIC substrate, hence it would have been obvious to an ordinary skill in the art at the time the invention was made that the sensors would have been arranged in mutual symmetry.

In reference to claim 7: *Blendonck* further teaches that the auxiliary capacitor is composed of at least one spur line (a relatively short line that leads from the capacitor to the main line of the ASIC input port (see Fig. 7) which would have been obvious to an ordinary skill in the art at the time the invention was made to have the ends upstream from the measuring capacitor (C_1 & C_2) and is designed and arranged like the feeder lines of the measuring capacitor because the measuring and the reference capacitors are adjacent to each other.

With regard to claim 8: *Blendonck* further teaches that the measuring capacitor is formed by the plurality of flat printed conductors in the form of inter-digital capacitor because the sensor electronics is formed or implemented in ASIC and the sensors directly connect to a microprocessor (see *Blendonck*, Fig. 7 and page 1818, 1st column, last paragraph).

With regard to claims 9 and 18: *Blendonck* further teaches that the printed conductors in the sensor system are printed on an insulating substrate by thin film or thick film method because the conductors as noted in Figs. 4 and 7 are developed on printed circuit board where all the active elements are built in the ASIC.

With regard to claim 10: *Blendonck* further includes a temperature sensor in the form of a temperature sensor element because the complex impedance Z (Cx, Rx) provides a measure of dielectric properties where temperature is one of the three parameters exploited (see *Blendonck*, page 1820, Fig. 4).

With regard to claim 11: *Blendonck* further teaches that the temperature sensor is connected to the dielectric sensor to form a structural unit because in Fig. 4 the dielectric calibration data is fed to the total impedance to form the correction values for the capacitance

values which also includes dielectric properties, such as temperature in a structured form to provide user conversion routine (see *Blendonck*, page 1820, Fig.4).

With regard to claims 12 and 13: *Blendonck* further teaches that the feeder line leading to the temperature sensor is applied to the insulating substrate in the form of printed conductors (see *Blendonck*, page 1819, Fig. 3, C_{ref}, R_{ref}, and C_p & R_p, and Fig.7, $Z_{1a,b}$.... $Z_{4a,b}$, page 1821, 1st column, and 1st paragraph; Complex impedance consist of sensors needed to obtain temperature readings).

In reference to claim 15: *Blendonck* further teaches that the first sensor is a capacitor on an ASIC substrate having an inter-digital capacitor (see *Blendonck*, Fig. 7), hence it would have been obvious to an ordinary skill in the art at the time the invention was made to have conductive feeder lines disposed on an insulating substrate lines made by thin film or thick film method. The feeder lines of the measuring capacitor and the auxiliary capacitor would also be identical in design and would be arranged in mutual symmetry for the same reason.

In reference to claim 18: *Blendonck* further teaches that the first sensor is a capacitor on an ASIC substrate having an inter-digital capacitor (see *Blendonck*, Fig. 7), hence it would have been obvious to an ordinary skill in the art at the time the invention was made to have conductive feeder lines disposed on an insulating substrate lines.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. *Morgan et al.* (U.S. Patent 5,994,906) teaches fluid measurement of dielectric property change in hydraulic fluid.

b. *Cheiky-Zelina et al.* (U.S. Patent 6,028,433) teaches portable fluid screening device and method.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elias Desta whose telephone number is (571)-272-2214. The examiner can normally be reached on M-Fri (10:30-7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)-272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Elias Desta
Examiner
Art Unit 2857

- E.D.

June 28, 2007

HAL WACHSMAN
PRIMARY EXAMINER
AU 2857